

WHAT IS CLAIMED IS:

1. A high strength steel sheet consisting essentially of 0.04 to 0.1% C, 0.5% or less Si, 0.5 to 2% Mn, 0.05% or less P, 0.005% or less O, 0.005% or less S, by weight, having 10 μm or less of average ferritic grain size, and 20 mm/mm^2 or less of generation frequency A, which generation frequency A is defined as the total length of a banded secondary phase structure observed per 1 mm^2 of steel sheet cross section along the rolling direction thereof.
2. The high strength steel sheet of claim 1 further containing 0.01 to 0.3% as the sum of at least one element selected from the group consisting of Ti, Nb, V, Mo, and Cr.
3. The high strength steel sheet of claim 1, wherein the variations of tensile strength in the width direction and in the longitudinal direction of the steel sheet is within $\pm 8\%$ to the average value thereof.
4. The high strength steel sheet of claim 2, wherein the variations of tensile strength in the width direction and in the longitudinal direction of the steel sheet is within $\pm 8\%$ to the average value thereof.
5. A method for manufacturing high strength steel sheet comprising the steps of: hot-rolling a continuously cast slab

having the composition described in claim 1 or claim 2 at temperatures of Ar, transformation point or above directly or after reheating thereof; and cooling the hot-rolled-steel sheet within 2 seconds down to the temperatures of from 600 to 750°C at cooling speeds of from 100 to 2,000°C/sec, followed by coiling the cooled steel sheet at temperatures of from 450 to 650°C.

6. The method for manufacturing high strength steel sheet of claim 5 further comprising the step of either applying pickling and annealing to the coiled steel sheet or applying pickling and cold-rolling, followed by annealing thereto.

7. The method for manufacturing high strength steel sheet of claim 5, wherein a treatment for reducing segregation is applied during the continuous casting.

8. The method for manufacturing high strength steel sheet of claim 6, wherein a treatment for reducing segregation is applied during the continuous casting.

9. The method for manufacturing high strength steel sheet of claim 5, wherein, after cooled the steel sheet at cooling speeds of from 100 to 2,000°C/sec, the variations of temperature in the width direction and in the longitudinal direction of the steel sheet are controlled within 60°C.

10. The method for manufacturing high strength steel sheet

of claim 6, wherein, after cooled the steel sheet at cooling speeds of from 100 to 2,000°C/sec, the variations of temperature in the width direction and in the longitudinal direction of the steel sheet are controlled within 60°C.

11. The method for manufacturing high strength steel sheet of claim 7, wherein, after cooled the steel sheet at cooling speeds of from 100 to 2,000°C/sec, the variations of temperature in the width direction and in the longitudinal direction of the steel sheet are controlled within 60°C.

12. The method for manufacturing high strength steel sheet of claim 8, wherein, after cooled the steel sheet at cooling speeds of from 100 to 2,000°C/sec, the variations of temperature in the width direction and in the longitudinal direction of the steel sheet are controlled within 60°C.

13. The method for manufacturing high strength steel sheet of claim 9, wherein the cooling is conducted at heat transfer coefficients of 2,000 kcal/m²h°C or more.

14. The method for manufacturing high strength steel sheet of claim 10, wherein the cooling is conducted at heat transfer coefficients of 2,000 kcal/m²h°C or more.

15. The method for manufacturing high strength steel sheet of claim 11, wherein the cooling is conducted at heat transfer

coefficients of 2,000 kcal/m²h°C or more.

16. The method for manufacturing high strength steel sheet of claim 12, wherein the cooling is conducted at heat transfer coefficients of 2,000 kcal/m²h°C or more.

17. A method for manufacturing high strength hot dip zinc-coated steel sheet comprising the steps of: hot-rolling a steel slab consisting essentially of 0.01 to 0.3% C, 0.7% or less Si, 1 to 3% Mn, 0.08% or less P, 0.01% or less S, 0.08% or less sol.Al, and 0.007% or less N, by weight, at temperatures of Ar, transformation point or above; cooling the hot-rolled steel sheet within 2.5 seconds down to the temperatures of from above 500°C to 700°C at average cooling speeds of 100°C/sec or more, followed by coiling the cooled steel sheet; and picking or pickling and cold-rolling the coiled steel sheet, then annealing thereto in a continuous hot dip zinc-coating line at temperatures of 720°C or above to perform zinc coating.

18. The method for manufacturing high strength hot dip zinc-coated steel sheet of claim 17, wherein the steel slab further contains at least one element selected from the group consisting of 0.005 to 0.5% Nb, 0.005 to 0.5% Ti, and 0.0002 to 0.005% B.

19. The method for manufacturing high strength hot dip zinc-coated steel sheet of claim 17, wherein the steel slab

further contains at least one element selected from the group consisting of 0.01 to 1% V, 0.01 to 1% Cr, and 0.01 to 1% Mo.

20. The method for manufacturing high strength hot dip zinc-coated steel sheet of claim 18, wherein the steel slab further contains at least one element selected from the group consisting of 0.01 to 1% V, 0.01 to 1% Cr, and 0.001 to 1% Mo.

21. The method for manufacturing high strength hot dip zinc-coated steel sheet of claim 17, wherein the steel sheet after completed the hot-rolling is cooled in a period of from more than 0.5 second to 2.5 seconds at average cooling speeds of 100°C /sec or more.

22. The method for manufacturing high strength hot dip zinc-coated steel sheet of claim 18, wherein the steel sheet after completed the hot-rolling is cooled in a period of from more than 0.5 second to 2.5 seconds at average cooling speeds of 100°C /sec or more.

23. The method for manufacturing high strength hot dip zinc-coated steel sheet of claim 19, wherein the steel sheet after completed the hot-rolling is cooled in a period of from more than 0.5 second to 2.5 seconds at average cooling speeds of 100°C /sec or more.

24. The method for manufacturing high strength hot dip

zinc-coated steel sheet of claim 20, wherein the steel sheet after completed the hot-rolling is cooled in a period of from more than 0.5 second to 2.5 seconds at average cooling speeds of 100°C /sec or more.

25. A method for manufacturing high strength steel sheet comprising the steps of: hot-rolling a continuously cast slab consisting essentially of 0.05 to 0.2% C, 0.15% or less Si, 0.4 to 2.0% Mn, 0.025% or less P, 0.005% or less O, 0.01% or less S, 0.006% or less N, and 0.004% or less Sn, by weight, and having Mn/S \geq 50 at temperatures of Ar, transformation point or above directly or after reheating the slab; and cooling the hot-rolled steel sheet down to the temperatures of from 400°C to 700°C at cooling speeds of from 20 to 2,000°C/sec, followed by coiling the cooled steel sheet.

26. The method for manufacturing high strength steel sheet of claim 25, wherein the continuously cast slab further contains 0.005% or less Ca.

27. The method for manufacturing high strength steel sheet of claim 25, wherein the reduction in thickness at the final stand during hot-rolling is in a range of from 8 to 30%.

28. The method for manufacturing high strength steel sheet of claim 26, wherein the reduction in thickness at the final stand during hot-rolling is in a range of from 8 to 30%.

29. The method for manufacturing high strength steel sheet of claim 25, wherein the cooling starts in a period of from more than 0.1 second to less than 1.0 second after completed the hot-rolling.

30. The method for manufacturing high strength steel sheet of claim 26, wherein the cooling starts in a period of from more than 0.1 second to less than 1.0 second after completed the hot-rolling.

31. The method for manufacturing high strength steel sheet of claim 27, wherein the cooling starts in a period of from more than 0.1 second to less than 1.0 second after completed the hot-rolling.

32. The method for manufacturing high strength steel sheet of claim 28, wherein the cooling starts in a period of from more than 0.1 second to less than 1.0 second after completed the hot-rolling.

33. The method for manufacturing high strength steel sheet of claim 25 further comprising the steps of cold-rolling then annealing the coiled steel sheet.

34. The method for manufacturing high strength steel sheet of claim 26 further comprising the steps of cold-rolling then annealing the coiled steel sheet.

35. The method for manufacturing high strength steel sheet of claim 27 further comprising the steps of cold-rolling then annealing the coiled steel sheet.

36. The method for manufacturing high strength steel sheet of claim 28 further comprising the steps of cold-rolling then annealing the coiled steel sheet.

37. The method for manufacturing high strength steel sheet of claim 29 further comprising the steps of cold-rolling then annealing the coiled steel sheet.

38. The method for manufacturing high strength steel sheet of claim 30 further comprising the steps of cold-rolling then annealing the coiled steel sheet.

39. The method for manufacturing high strength steel sheet of claim 31 further comprising the steps of cold-rolling then annealing the coiled steel sheet.

40. The method for manufacturing high strength steel sheet of claim 32 further comprising the steps of cold-rolling then annealing the coiled steel sheet.